

NOTES ON SOME SOUTHERN CALIFORNIA PLANTS

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In the following list those plants whose names are designated by an asterisk are here first reported from the state; those marked by a dagger are additions to the known flora of the southern counties. The numbers under which specimens collected by the writer were distributed are inclosed in parentheses without the collector's name; they are represented in the herbaria of California, Harvard, and Stanford Universities.

* CHEILANTHES FEEI Moore, Ind. Fil. 38. 1857.—Providence Mountains, *T. S. Brandege* (hb. Univ. Cal.). Erroneously reported in *Zoe* 5:153 as *Notholaena Newberryi* Eaton.

PILULARIA AMERICANA R. Br. Berlin Monatsb. 1863:435.—Abundant in desiccating winter pools on a clay mesa near Upland, *Ivan Johnston* 34, March 8, 1917. The few previous collections in this state were made near San Diego and Santa Barbara, growing under similar conditions.

ISOETES MELANOPODA PALLIDA Engelm. Trans. St. Louis Acad. 4:387. 1882.—Abundant in the above pools, where it was collected at the same date by the same collector. While the plants are much smaller than indicated in the type character, the longest of the very narrow leaves being not quite 4 cm. long, they agree with specimens collected by *Orcutt* at San Diego and now in the U.S. National Herbarium, which were identified as authentic by A. A. EATON and with which they were kindly compared by Mr. MAXON.

* PASPALUM LARANGAE Arech. Ann. Mus. Nac. Montevied. 1:60. pl. 2. 1894.—In ground irrigated by the water tank at Palm Springs railway station, Colorado Desert (8620, September 20, 1913). Mrs. AGNES CHASE, by whom this grass was identified, informs me that there is another specimen in the herbarium of the United States Department of Agriculture, coming from Barrey Creek, Butte County.

PENNISETUM VILLOSUM R. Br. in Fresch. Mus. Sencken. 2:154. 1837.—Occasional along streets and in waste grounds at Ventura (11020, September 19, 1916) and Santa Barbara.

MUHLENBERGIA REPENS (Presl) Hitchc. in Jeps. Fl. Cal. 111. 1912.—In marshy soil near Upland, *Ivan Johnston*, October 2, 1916. The only other station reported from California is *Coville* and *Funston* 228, from Furnace Creek, Death Valley.

* SPOROBOLUS FLEXUOSUS (Thurb.) Rydb. Bull. Torr. Bot. Club 32:601. 1905.—On dry gravelly plains at Leastalk (10328, June 3, 1915) and in the adjacent New York Mountains (10237) in the southeastern corner of the Mojave Desert.

* PUCCINELLIA SIMPLEX Scribn. U.S. Dept. Agric. Div. Agrost. Circ. 16:1. fig. 1. 1899.—In damp alkaline soil, Rabbit Springs, Mojave Desert (9799, April 26, 1915).

ELYMUS CINEREUS Scribn. and Merr. Bull. Torr. Bot. Club 29:467. 1902.—In dry bottom lands along the Mojave River at Victorville (10558, June 25, 1915). The only other reported California collection is *Elmer* 3662, from Lancaster. Both these stations are in the northwestern part of the Mojave Desert. The type was collected at Pahrump, Utah.

SCIRPUS ROBUSTUS PALUDOSUS (A. Nels.) Fernald, Rhodora 2:241. 1900.—Entirely filling the large pond formed by the run-off of Postoffice Spring, Panamint Valley (10109, May 11, 1915). Probably this is the sedge reported by *COVILLE* (Contr. U.S. Nat. Herb. 4:215) as *S. maritimus* from Saratoga Springs in Death Valley, but no *Scirpus* was found there by the writer in May, 1915, nor was it seen elsewhere in the Mojave Desert, even on the Colorado River; but it is abundant at and below Fort Yuma, and is a troublesome weed in the irrigation canals of Imperial Valley.

CLADIUM MARISCUS CALIFORNICUM Wats. Bot. Cal. 2:224. 1880.—In a swamp near Upland, *Ivan Johnston*, October 2, 1916. In his description *WATSON* cites two specimens, one from "a swamp near San Gabriel," and the other from southern Nevada. The only subsequent collection in the state was *Coville* and *Funston* 231, from Furnace Creek, Death Valley. *BREWER*'s southern California collections were made in 1876, so that 40 years elapsed before the plant was rediscovered in the cismontane region, local botanists

having searched for it in vain, and having come to regard it as extinct, or wrongly attributed to their region. JOHNSTON'S station and BREWER'S are not widely separated.

YUCCA BACCATA Torr. Bot. Mex. Bound. Surv. 221. 1856.—Abundant on mesas and foothill slopes of New York (Barnwell, 10281, June 4, 1915), Ivanpah, and Providence mountains, in the southeastern part of the Mojave Desert. Associated with *Y. brevifolia* Engelm. and *Y. mohavensis* Sargent. From the last species, the acaulescent forms of which it much resembles, it can readily be distinguished by the yellow-green color of the foliage. The plants are acaulescent, or nearly so, in few-branched clumps, the close panicle elevated on a scape not more than a meter high.

PHYLLOGONUM LUTEOLUM Coville, Contr. U.S. Nat. Herb. 4: 190. pl. 21. 1893.—Furnace Creek, Death Valley (10008, May 18, 1915). Very sparingly scattered among the pebbles covering the dry bed of the stream, immediately above the small marsh from which the stream rises, probably the exact spot where COVILLE, on April 7, 1891, collected the two specimens on which he founded the genus, since which time the plant had not been rediscovered. Two small specimens were also seen in a dry wash between Furnace Creek and Saratoga Springs. So far as known, the species is an endemic of Death Valley, and very rare even there. The plants are prostrate, and the largest found had stems hardly 3 cm. long.

ATRIPLEX CONFERTIFOLIA Wats. Proc. Amer. Acad. 9: 119. 1874.—This is one of the most widely distributed plants of the Mojave Desert, and often the dominant species, but it has not been found in the Colorado Desert, where *A. canescens* James occupies a like dominance. The latter species is found in most parts of the Mojave Desert, but constitutes a very subordinate part of the plant cover.

* SALICORNIA UTAHENSIS Tidestrom, Proc. Biol. Soc. Wash. 26: 13. 1913.—A small colony on the borders of Panamint Marsh, at a point on the road from Lone Willow Spring to Ballarat (10403, May 9, 1915).

† AMARANTHUS DEFLEXUS L. Mant. 2: 295. 1771.—This amaranth, which is so abundant in the streets of the cities about San Francisco Bay, is equally abundant in the streets of Santa Barbara

(10110, September 12, 1916), and in June 1917, a few plants were collected along the railway at Ontario (*Johnston* 1433).

* *ALLIONIA LINEARIS* Pursh, Fl. Am. Sept. 728. 1814. Barnwell, New York Mountains (10276, June 3, 1916), and at the same place by Mrs. *K. Brandegee*. Both specimens are scanty and immature and possibly may prove to be *A. pinetorum* Standley.

† *ABRONIA EXALTATA* Standley, Contr. U.S. Nat. Herb. 12:318. pl. 35. 1900.—On a dry hillside at Baxter, at the lower end of the "Narrows" of the Mojave River (10403, May 25, 1915). Also at Kelso, in the same desert, *T. S. Brandegee*, June 1915.

CALANDRINIA AMBIGUA (Wats.) Howell, *Erythea* 1:34. 1893.—Infrequent in dry alkaline soil. Manix Lake, near Camp Cady, *Shreve*, April 23, 1915. Afton, upper end of the "Narrows" of the Mojave River (10366, May 24, 1915). Salt Springs, in the ancient channel of Amargosa River (10405, May 21, 1915). The type and all other previous collections were from the Colorado Desert.

* *SAGINA APETALA* Ard. Anamad. Bot. Spec. Alt. 2, pl. 5. 1764.—Plentiful in a city yard, Pasadena, *George B. Grant*, April 15, 1917. Plants sparsely glandular, the bases of the leaves not ciliolate. The variety *barbata* Fenzl has been collected in several places in Central California.

BERBERIS FREMONTII Torr. Bot. Mex. Bound. Surv. 30, 1859.—New York Mountains near Barnwell (10258, June 4, 1915), three small groups of scrubby trees 10–12 ft. high.

ARGEMONE INTERMEDIA CORYMBOSA (Greene) Eastwood, *Erythea* 4:96. 1896.—Frequent on dry mesas in the Mojave Desert. Black's Ranch, *Hall* and *Chandler* 6848. Silver Lake (9863, May 22, 1915). GREENE'S type, as represented on sheet 126416 hb. Univ. Cal., consists of two capsules, and is labeled "M. K. Curran, June 1884, Mojave Desert."

* *LESQUERELLA GORDONI* (Gray) Wats. Proc. Amer. Acad. 23:253. 1888.—Abundant, the stems protruding through the low shrubs scattered over the arid mesa at Goffs, Mojave Desert (9647, March 22, 1915). In early June of the same year all traces of the plant had disappeared.

* *LESQUERELLA PALMERI* Wats. Proc. Amer. Acad. 23:255. 1888.—A single plant on a dry hillside under pines, Bear Valley,

alt. 6500 ft., in the San Bernardino Mountains, June 18, 1916, *Chandler*. The type of this species was a plant grown at Washington from seeds collected in 1872 somewhere in Arizona by *Palmer*. A second collection was cited from Topo Canyon, Lower California, *Orcutt* in 1884, but I can learn of no later collections.

* *STANLEYA ELATA* Jones, *Zoe* 2:16. 1891.—On dry banks near the head of Wild Rose Canyon, Panamint Mountains (10004, May 14, 1915). Only a few plants were seen, just beginning to flower. The type was collected at Hawthorn, Nevada.

OXYSTYLIS LUTEA Torr. and Frem. *Frem. 2d Rept.* 313. 1845.—A few specimens were seen in dry soil at several places along the Amargosa River, but only in dry remains (*Zabriskie*, 9889, May 20, 1915), but living plants were found in the almost obliterated ancient channel of that river near Salt Spring (9877, May 21). The plant appears to be strictly endemic in this limited region.

* *LUPINUS FLAVOCULATUS* Heller, *Muhl.* 5:149. 1909.—Wild Rose Spring, Panamint Mountains (10073, June 3, 1915). *Barnwell, K. Brandegee*. The type was from Nye County, Nevada.

LUPINUS PALLIDUS Brandegee, *Zoe* 4:203. 1893.—*L. desertorum* Heller, *Muhl* 2:72. 1905.—*Randsberg, Heller* 7679, type of *L. desertorum*. Lone Willow Wash, Argus Mountain (10114, May 9, 1915). Ord Mountain, *Hall and Chandler* 6792. The type was from San Vincente, in northern Lower California, and the plant has also been collected in the Colorado Desert.

ASTRAGALUS TRIFLORUS Gray, *Pl. Wright* 2:45. 1855.—New York Mountains near Leastalk (10364, June 3, 1915).

TRIFOLIUM GRACILENTUM var. *reductum* Parish, var. nov.—Abundant in coarse decomposed soil, on the summit of Pilot Knob, alt. 5525 ft., Mojave Desert (10160, May 10, 1915). Stems erect, simple or with 1-2 short branches, 4-6 cm. high; leaflets cuneate-obovate, erose, denticulate, strongly nerved, 2-3 mm. long; heads 2-4-flowered; corolla purple, 5 mm. long; pods ~~ovate~~, 2-seeded, 4 mm. long.

CASSIA ARMATA Wats. *Proc. Amer. Acad.* 2:136. 1876.—This species, which is abundant in the southwestern borders of the Mojave Desert, has now been collected on the Colorado Desert

side of Eagle Mountains at Cottonwood Springs (10856, May 13, 1916).

RUTA CHALAPENSIS L. Mant. 1:69. 1767.—Abundant for some distance along a street in the Mexican quarter at Ventura (11046, September 1916). The *Ruta bracteosa* of DAVIDSON'S *Plants of Los Angeles County*, reported as found "in a field at El Monte."

TETRACOCCLUS HALLII Brandegee, Zoe 5:229. 1908.—Abundant on the arid hills at Cottonwood Springs, in the Eagle Mountains, a part of the range dividing the Colorado from the Mojave Desert (10844, 10845, May 13, 1916). The type was collected, in flower only, at Chuckawalla Bench, in the same region as above, by *Hall* and *Greata* 5865, and the plant is known only from these two collections. A compact rigid shrub 0.6–1 m. high; capsule ovoid to ovoid-oblong, light brown, densely hirsute with very short white hairs, 6–7 mm. high; carpels 3, lobulate at base, 1-seeded; seeds light in color, shining, minutely puncticulate; caruncle minute, wart-shaped.

* *CONDALIA LYCIOIDES* (Gray) Weberb. in Engl. and Prantl. Nat. Pflanzenf. 35:404.—Forming dense thickets along the edge of the dry wash at Cottonwood Springs (10846, May 13, 1916).

* *MENTZELIA NITENS* Greene, Fl. Franc. 234. 1891.—In dry washes, Lone Willow Springs, Argus Mountain (10129, May 9, 1915).

MENTZELIA REFLEXA Coville, Proc. Biol. Soc. Wash. 7:74. 1892.—This is a common plant in dry hot canyons in the Panamint Mountains and Death Valley region, where the type was collected by *Coville* and *Funston*. Furnace Creek (10041, May 17, 1915); Salt Creek (10063, May 21). A few specimens were found at Calico (9780, April 23), which is the western known limit.

* *OPUNTIA ACANTHOCARPA* Engelm. and Bigel.; Engelm. Pacif. R.R. Rept. 4:51. 1856.—An abundant and vigorous growth of this *Opuntia* forms a distinct belt along the base of the New York Mountains near Leastalk.

OPUNTIA MOJAVENSIS Engelm. and Bigel.; Engelm. Pacif. R.R. Rept. 4:40, pl. 9, figs. 6–8. 1856.—In 1853 BIGELOW collected a platopuntia "on the Mojave, west of the Colorado," to which the foregoing name was given. In April 1915 I sent living specimens

of an *Opuntia* found in the New York Mountains at Barnwell to ROSE, which he identifies as of this species, which in the intervening years had remained known only from the original imperfect specimens.

OPUNTIA PARRYI Engelm. Amer. Jour. Sci. II. 14:339. 1852.—Two small clumps of this rare species were seen, June 1915, growing in sandy soil on the open mesa at Leastalk.

* GAURA COCCINEA Nutt.; Pursh, Fl. 733. 1814.—Providence Mountains, *Brandegee*. New York Mountains, near Barnwell (10254, June 4, 1915).

* OENOTHERA MULTIJUGA Wats. Proc. Amer. Acad. 8:595. 1873.—Two plants of this little known species were collected at "The Tanks" in Furnace Creek, Death Valley (10045, May 18, 1915). The type was from Utah.

* OENOTHERA PRIMIVERIS Gray, Pl. Wright. 2:58. 1853.—Apparently not infrequent in parts of the Mojave Desert in early spring. Randsberg and Barstow, *K. Brandegee*. Lavic, *Hall* 6103. Goffs (9646, March 22, 1915).

MENODORA SPINESCENS Gray, Proc. Amer. Acad. 7:388. 1868.—Very abundant on the mesa at Leastalk (10360, June 5, 1915), and conspicuous by the shining white fruit with which the low bushes were plentifully laden. A few taller shrubs were found in flower in the hills 14 miles northeast of Barstow (9795, April 23, 1915). Other collections are: Providence Mountains, *Brandegee*; Argus Mountain, *Hall* and *Chandler*; Ord Mountain, *Hall* and *Chandler*.

* AMOBROMA SONORAE Torr. Ann. Lyc. N.Y. 8:51, *pl.* 1.—Sandhills near Meloland, Imperial Valley, *W. C. Paccard* in 1914. In May 1915 I saw a specimen on exhibition at Brawley in the same valley, which had been found in the neighborhood. The type was from adjacent Sonora.

GILIA OCHROLEUCA Jones, Contrib. W. Bot. 8:35. 1898.—The type was collected in the Argus Mountains, and other collections are: Darwin Valley, *Hall* and *Chandler* 7103; Nelson Range, *Hall* and *Chandler* 7113; Barnwell, *T. S. Brandegee*; Kramer, *K. Brandegee*; Rabbit Springs (9807, April 25, 1915). The species appears to be endemic in the Mojave Desert, the Colton specimen cited by BRAND (Engl. Pflanzenr. IV. 250: 105) being an error, as I am informed by JONES, to whom it is attributed.

PHACELIA CALTHIFOLIA Brand, Beitrag. Hydroph. 8. 1911.—An abundant plant in the Death Valley region, growing in gravelly soil in washes and in open ground. Furnace Creek, the type station (10036, May 17, 1915). Zabriskie, on the Amargosa River (10021, May 20, 1915).

* OREOCARYA ECHINOIDES (Jones) Macbr. Contr. Gray Herb. N.S. no. 68. 31. 1916.—A few plants were found growing among the rough rocks at "The Cave" in the Ivanpah Mountains (10243, June 5, 1916).

* LYCOPSIS ARVENSIS L. Sp. Pl. 139. 1753.—Well established in a wash at Upland, *Ivan Johnston* 29, March 3, 1917.

SALVIA FUNEREA, Jones, Contrib. W. Bot. 12:71. 1908.—A single compact, rounded shrub, about 0.3 m. high, in the dry bed of Furnace Creek, not far from its mouth (10032, May 17, 1915). The type was collected in the adjacent Funeral Mountains, and the plant is known only from that and the present collection; it is probably the same as *S. Greatai* Brandegee, *Zoe* 5:219. 1906, known only from the type collection, made by *Hall* and *Greata* at Canyon Springs, in the Colorado Desert; but further material is desirable.

PHYSALIS HEDERAEFOLIA Gray, Proc. Amer. Acad. 10:65. 1874.—Ravines in the mesa at Leastalk (10362, June 3, 1915) and abundant in the adjacent New York Mountains (10312, June 5, 1915).

* ANTIRRHINUM KINGII Wats. King's Explor. 5:215. *pl.* 21. *figs.* 1-4. 1871.—Emigrant Springs, Mojave Desert (10635, May 14, 1915), a single plant.

MOHAVEA BREVIFLORA Coville, Contr. U.S. Nat. Herb. 4:168. *pl.* 17. 1893.—An abundant plant in dry washes and on canyon slopes in the Death Valley and Panamint Valley region. Lone Willow Springs (10178); Wild Rose Canyon (10085); Furnace Creek (9865); Greenwater Flat (10051); Baxter (10408), all collected in May, 1915. A few plants collected April 23, 1915, by *Shreve*, in Calico Wash, are the most western known.

* PENTSTEMON SUBULATUS Jones, Contrib. W. Bot. 12:63. 1908.—A few plants, almost out of flower, were found on a dry bank in the Ivanpah Mountains (10317, June 5, 1915), and one or two were seen at Vanderbilt, in the New York Mountains, on the following day.

* *IPOMEA HIRSUTULA* Jacq. Eclog. Pl. Rar. 1:63. 1811.—In an orange grove at Riverside, *Gordon Surr*, December 1915. In *DAVIDSON'S List of Los Angeles County Plants* (1892), he includes this plant under the synonym *I. mexicana* Gray, but in a subsequent list published in 1896 he substitutes *I. purpurea* Lam., a common and often troublesome weed in southern California. The above is the only, and certainly an erroneous, previous report of the present species in the state.

CUCURBITA CALIFORNICA Torr. ex Wats. Proc. Amer. Acad. 2: 138. 1876.—The type of this species is said to have been collected "at some locality in Sacramento Valley" by Dr. *E. Pickering* on the Wilkes Exploring Expedition in 1841; and in the *Botany of California* (2:40) it is added that a plant "apparently the same" was collected at Carrizo Creek, in the Colorado Desert, by *Emory*, evidently on the Mexican Boundary Survey in 1852. Nothing further was heard of the plant until August 1882, when the writer found a few individuals growing in sandy soil at Redlands, all of which were destroyed in a few years by the advance of cultivation. Material from this collection was described by *PARRY* in Bull. Torr. Bot. Club 10:50, with a cut of a leaf and section of the fruit. *PARRY* was the first to point out the real distinguishing characters of the species, for *WATSON'S* two lines of description is scarcely improved by him in the *Botany of California*, and neither of them suffices to discriminate this from *C. palmata* Wats., a frequent species of the southern California deserts, found also in some cis-montane parts of San Diego and Riverside counties, and even reported to reach San Joaquin County in the central California area. The two species are very similar in their general aspect; in fact, on cursory inspection, they might readily be confounded when not in fruit, which may account for the few collections of the rarer species. *C. californica*, however, is readily recognizable at all times by the harsher hispidity of its leaves; but the best character is found in the hispid ovary, and especially in the hispid fruit, which has a thin, soft rind, becoming ashy gray in color and rugosely shrunken at maturity. The "smaller size and diminutive foliage" ascribed to the plant in the description can be found in individuals of either species. To the above stations may now be added:

Cottonwood Springs, in the Eagle Mountains, Colorado Desert (10854, May 13, 1916), where it was growing along a dry wash, and a point on the Colorado River 15 miles east of Searchlight, Nevada, where it was abundant and vigorous in the ill-cultivated field of a squaw man (10413, June 6, 1915). So far as I have been able to ascertain, the stations I have given are all that are known for this plant, and in view of their geographical position and of the insufficient original description, they throw some doubt on the identity of the later specimens with the type.

ACAMPTOPAPPUS SHOCKLEYI Gray, Proc. Amer. Acad. 7:208. 1882.—In dry gravelly soil, Harrison Flat (10168) and Emigrant Springs (10194), both May 13, 1915. The first of these stations is the "Perognathus Flat" of the Death Valley Expedition Reports, and both are on the Death Valley slope of the Panamint Mountains.

PSILOSTROPHE COOPERI (Gray) Greene, Pitt. 2:176. 1891.—This species is so abundant on the mesas at Cima and Leastalk (10252, June 1915) that considerable tracts are golden with its showy flowers.

* DYSODIA THURBERI (Gray) Robinson, Proc. Amer. Acad. 49:508. 1913.—Quite abundant on a small gravelly bench in the Ivanpah Mountains (10241, June 5, 1915), but not seen elsewhere.

* HYPOCHAERIS GLABRA EROSTRIS Cos. and Germ. Fl. Par.—On a dry clay mesa at Upland, *Ivan Johnston* 77, April 8, 1917. Plants slender; stems unbranched or few-branched; leaves obovoid, entire or few-toothed; heads few-flowered; achenes all truncate. An ecological form of arid soils.

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